

**STORM WATER
MANAGEMENT PLAN**
for
Maggio Drive / Shellstrom

PREPARED BY:

MAY ENGINEERING AND SURVEYING

12222 A Woodside Ave. #237

Lakeside CA 92040

PHONE: (619) 463-8580

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TPM 21094

LOG 07-15-001

STP 09-006

FOR: Doug Shellstrom
15201 Presilla Dr.
Jamul, CA 91935



RECEIVED
MAR - 3 2010

DEPARTMENT OF PLANNING
AND LAND USE

11/1/2008
WO 6373



County of San Diego

STORMWATER INTAKE FORM FOR DEVELOPMENT PROJECTS

This form must be completed in its entirety and accompany applications for any of the discretionary or ministerial permits and approvals referenced in Sections 67.803(c)(1) and 67.803(c)(2) of the County of San Diego Watershed Protection, Stormwater Management and Discharge Control Ordinance (WPO).

STEP 1: IDENTIFY RELEVANT PROJECT INFORMATION

Applicant Name: Doug Shellstrom		Contact Information: Doug Shellstrom, 15201 Presilla Drive Jamul, CA 91935
Project Address: Viejas Blvd 700' West of Hwy 79	APN(s): 408-080-68	Permit Application #: TPM 21094 IR. 07-15-001

STEP 2: DETERMINE PRIORITY DEVELOPMENT PROJECT STATUS

WPO Section 67.802(w) defines the criteria for determining whether your project is considered a Priority Development Project (PDP). If you answer "Yes" to any of the questions below, your project is a PDP subject to review and approval of a Major Stormwater Management Plan (SWMP). If you answer "No" to all of the questions below, your project is subject to review and approval of a Minor SWMP.

1. Residential subdivision of 10 or more dwelling units (Single-family, Multi-family, Condo, or Apartment Complex) Yes ☒ No
2. Commercial development that includes development of land area greater than one (1) acre Yes ☒ No
3. Industrial development greater than one (1) acre Yes ☒ No
4. Automotive repair shop Yes ☒ No
5. Restaurant or restaurant facilities with an area of development of 5,000 square feet or greater Yes ☒ No
6. On a steep hillside (>25% natural slope) AND proposes 5,000 square feet of impervious surface or more, or includes grading of any natural slope >25% ⁽¹⁾ Yes ☒ No
7. Located within 200 feet of an Environmentally Sensitive Area AND creates 2,500 square feet or more of impervious surface or increases the area of imperviousness of a site to more than 10% of its naturally occurring condition ^{(1) (2)} Yes ☒ No
8. A parking lot that is 5,000 square feet or greater OR proposes at least 15 new parking stalls Yes ☒ No
9. Streets or roads that create a new paved surface that is 5,000 square feet or greater ☒ Yes ☐ No
10. Retail gasoline outlet Yes ☒ No

⁽¹⁾ In lieu of a Major SWMP, Ministerial Permit Applications for residential dwellings/additions on an existing legal lot answering "Yes" may be able to utilize the Minor Stormwater Management Plan upon approval of a county official. Please note that upon further analysis, staff may determine that a Major SWMP will be required.

⁽²⁾ A County technician will assist you in determining whether your project is located within 200 feet of an Environmentally Sensitive Area.



If you answered "Yes" to any of the questions, please complete a Major SWMP for your project.

Instructions and an example of the form can be downloaded from http://www.co.san-diego.ca.us/dpw/watersheds/land_dev/susmp.html

If you answered "NO" to all of the questions above, please complete a Minor SWMP for your project.

Instructions and an example of the form can be downloaded from <http://www.sdcounty.ca.gov/dplu/docs/LUEG-SW.pdf>

STEP 3: SIGN AND DATE THE CERTIFICATION

APPLICANT CERTIFICATION: I have read and understand that the County of San Diego has adopted minimum requirements for managing urban runoff, including stormwater, from construction and land development activities. I certify that this intake form has been completed to the best of my ability and accurately reflects the project being proposed. I also understand that non-compliance with the County's WPO and Grading Ordinance may result in enforcement by the County, including fines, cease and desist orders, or other actions.

Applicant: 

Date: **2-26-10**

Storm Water Management Plan For Priority Projects (Major SWMP)

The Major Stormwater Management Plan (Major SWMP) must be completed in its entirety and accompany applications to the County for a permit or approval associated with certain types of development projects. To determine whether your project is required to submit a Major or Minor SWMP, please reference the County's Stormwater Intake Form for Development Projects.

Project Name:	Maggio Drive /Shellstrom /A.P.N. 408-080-68
Permit Number (Land Development Projects):	TPM 21094
Work Authorization Number (CIP only):	
Applicant:	Doug Shellstrom
Applicant's Address:	15201 Presilla Drive, Jamul, CA 91935
Plan Prepare By (<i>Leave blank if same as applicant</i>):	
Date:	10-Oct-2008
Revision Date (If applicable):	

The County of San Diego Watershed Protection, Storm Water Management, and Discharge Control Ordinance (WPO) (Ordinance No. 9424) requires all applications for a permit or approval associated with a Land Disturbance Activity to be accompanied by a Storm Water Management Plan (SWMP) (section 67.806.b). The purpose of the SWMP is to describe how the project will minimize the short and long-term impacts on receiving water quality. Projects that meet the criteria for a priority development project are required to prepare a Major SWMP.

Since the SWMP is a living document, revisions may be necessary during various stages of approval by the County. Please provide the approval information requested below.

Project Stages	Does the SWMP need revisions?		If YES, Provide Revision Date
	YES	NO	
		X	

Instructions for a Major SWMP can be downloaded at
<http://www.sdcountry.ca.gov/dpw/watersheds/susmp/susmp.html>

Completion of the following checklists and attachments will fulfill the requirements of a Major SWMP for the project listed above.

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	YES	NO	
		X	

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PROJECT DESCRIPTION

Please provide a brief description of the project in the following box. Please include:

- Project Location
- Project Description
- Physical Features (Topography)
- Surrounding Land Use
- Proposed Project Land Use
- Location of dry weather flows (year-round flows in streams, or creeks) within project limits, if applicable.

Project Location: The project is located in the Descanso community on the north side of Viejas Blvd. and the west side of Maggio Drive approximately 700' west of Highway 79.

Project Description: The project is a minor subdivision of one lot into five lots of at least four acres each.

Physical Features (Topography): There is an eight feet fall across the parcel, measured from its highest point to lowest point. It has an average slope of 1% with the northeast corner being the highest point and the southwest corner being the lowest.

Surrounding Land Use: The surrounding land use is low density residential similar to the project.

Proposed Land Use: The proposed land use is low density residential units.

Location of dry weather flows: There is no dry weather flow within the project limits.

PRIORITY DEVELOPMENT PROJECT DETERMINATION

Please check the box that best describes the project. Does the project meet one of the following criteria?

Table 1

PRIORITY DEVELOPMENT PROJECT	YES	NO
Redevelopment that creates or adds at least 5,000 net square feet of additional impervious surface area	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Residential development of more than 10 units	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Commercial developments with a land area for development of greater than 1 acre	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Heavy industrial development with a land area for development of greater than 1 acre	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Automotive repair shop(s)	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Restaurants, where the land area for development is greater than 5,000 square feet	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Hillside development, in an area with known erosive soil conditions, where there will be grading on any natural slope that is twenty-five percent or greater, if the development creates 5,000 square feet or more of impervious surface	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Environmentally Sensitive Areas (ESA): All development located within or directly adjacent to or discharging directly to an ESA (where discharges from the development or redevelopment will enter receiving waters within the ESA), which either creates 2,500 square feet of impervious surface on a proposed project site or increases the area of imperviousness of a proposed project site to 10% or more of its naturally occurring condition. "Directly adjacent" means situated within 200 feet of the ESA. "Discharging directly to" means outflow from a drainage conveyance system that is composed entirely of flows from the subject development or redevelopment site, and not commingled with flows from adjacent lands.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Parking Lots 5,000 square feet or more or with 15 parking spaces or more and potentially exposed to urban runoff	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Streets, roads, highways, and freeways which would create a new paved surface that is 5,000 square feet or greater	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Retail Gasoline Outlets (RGO) that meet the following criteria: (a) 5,000 square feet or more or (b) a projected Average Daily Traffic (ADT) of 100 or more vehicles per day.	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Limited Exclusion: Trenching and resurfacing work associated with utility projects are not considered Priority Development Projects. Parking lots, buildings and other structures associated with utility projects are subject to the WPO requirements if one or more of the criteria above are met.

If you answered **NO** to all the questions, then **STOP**. Please complete a Minor SWMP for your project.
If you answered **YES** to any of the questions, please continue.

HYDROMODIFICATION DETERMINATION

The following questions provide a guide to collecting information relevant to hydromodification management issues.

Table 2

	QUESTIONS	YES	NO	Information
1.	Will the proposed project disturb 50 or more acres of land? (Including all phases of development)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	If YES, continue to 2. If NO, go to 6.
2.	Would the project site discharge directly into channels that are concrete-lined or significantly hardened such as with rip-rap, sackcrete, etc, downstream to their outfall into bays or the ocean?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	If NO, continue to 3. If YES, go to 6.
3.	Would the project site discharge directly into underground storm drains discharging directly to bays or the ocean?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	If NO, continue to 4. If YES, go to 6.
4.	Would the project site discharge directly to a channel (lined or un-lined) and the combined impervious surfaces downstream from the project site to discharge at the ocean or bay are 70% or greater?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	If NO, continue to 5. If YES, go to 6.
5.	Project is required to manage hydromodification impacts.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Hydromodification Management Required as described in Section 67.812 b(4) of the WPO.
6.	Project is not required to manage hydromodification impacts.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Hydromodification Exempt. Keep on file.

An exemption is potentially available for projects that are required (No. 5. in Table 2 above) to manage hydromodification impacts: The project proponent may conduct an independent geomorphic study to determine the project's full hydromodification impact. The study must incorporate sediment transport modeling across the range of geomorphically-significant flows and demonstrate to the County's satisfaction that the project flows and sediment reductions will not detrimentally affect the receiving water to qualify for the exemption.

STORMWATER QUALITY DETERMINATION

The following questions provide a guide to collecting information relevant to project stormwater quality issues. Please provide the following information in a printed report accompanying this form.

Table 3

	QUESTIONS	COMPLETED	NA
1.	Describe the topography of the project area.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2.	Describe the local land use within the project area and adjacent areas.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3.	Evaluate the presence of dry weather flow.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4.	Determine the receiving waters that may be affected by the project throughout all phases of development through completion (i.e., construction, long-term maintenance and operation).	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5.	For the project limits, list the 303(d) impaired receiving water bodies and their constituents of concern.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6.	Determine if there are any High Risk Areas (which is defined by the presence of municipal or domestic water supply reservoirs or groundwater percolation facilities) within the project limits.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
7.	Determine the Regional Board special requirements, including TMDLs, effluent limits, etc.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
8.	Determine the general climate of the project area. Identify annual rainfall and rainfall intensity curves.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
9.	Determine the soil classification, permeability, erodibility, and depth to groundwater for Treatment BMP consideration.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
10.	Determine contaminated or hazardous soils within the project area.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
11.	Determine if this project is within the environmentally sensitive areas as defined on the maps in Appendix A of the <i>County of San Diego Standard Urban Storm Water Mitigation Plan for Land Development and Public Improvement Projects</i> .	<input checked="" type="checkbox"/>	<input type="checkbox"/>
12.	Determine if this is an emergency project.	<input checked="" type="checkbox"/>	<input type="checkbox"/>

WATERSHED

Please check the watershed(s) for the project.

<input type="checkbox"/> San Juan 901	<input type="checkbox"/> Santa Margarita 902	<input type="checkbox"/> San Luis Rey 903	<input type="checkbox"/> Carlsbad 904
<input type="checkbox"/> San Dieguito 905	<input type="checkbox"/> Penasquitos 906	<input type="checkbox"/> San Diego 907	<input checked="" type="checkbox"/> Sweetwater 909
<input type="checkbox"/> Otay 910	<input type="checkbox"/> Tijuana 911	<input type="checkbox"/> Whitewater 719	<input type="checkbox"/> Clark 720
<input type="checkbox"/> West Salton 721	<input type="checkbox"/> Anza Borrego 722	<input type="checkbox"/> Imperial 723	

Please provide the hydrologic sub-area and number(s)

Number	Name
909.34	Upper Sweetwater Hydrologic Sub Area

Please provide the beneficial uses for Inland Surface Waters and Ground Waters.

Beneficial Uses can be obtained from the Water Quality Control Plan for the San Diego Basin, which is available at the Regional Board office or at

http://www.waterboards.ca.gov/sandiego/water_issues/programs/basin_plan/index.shtml

SURFACE WATERS	Hydrologic Unit Basin Number	MUN	AGR	IND	PROC	GWR	FRESH	POW	REC1	REC2	BIOL	WARM	COLD	WILD	RARE	SPWN
Inland Surface Waters																
Descanso Creek	909.34	X	X	X	X				X	X		X	X	X		
Ground Waters																
Upper Sweetwater	909.30	X	X													

* Excepted from Municipal

X Existing Beneficial Use

0 Potential Beneficial Use

POLLUTANTS OF CONCERN

Using Table 4, identify pollutants that are anticipated to be generated from the proposed priority project categories. Pollutants associated with any hazardous material sites that have been remediated or are not threatened by the proposed project are not considered a pollutant of concern.

Table 4. Anticipated and Potential Pollutants Generated by Land Use Type

<i>PDP Categories</i>	<i>General Pollutant Categories</i>								
	Sediments	Nutrients	Heavy Metals	Organic Compounds	Trash & Debris	Oxygen Demanding Substances	Oil & Grease	Bacteria & Viruses	Pesticides
Detached Residential Development	X	X			X	X	X	X	X
Attached Residential Development	X	X			X	P ⁽¹⁾	P ⁽²⁾	P	X
Commercial Development 1 acre or greater	P ⁽¹⁾	P ⁽¹⁾		P ⁽²⁾	X	P ⁽⁵⁾	X	P ⁽³⁾	P ⁽⁵⁾
Heavy industry /industrial development	X		X	X	X	X	X		
Automotive Repair Shops			X	X ⁽⁴⁾⁽⁵⁾	X		X		
Restaurants					X	X	X	X	
Hillside Development >5,000 ft ²	X	X			X	X	X		X
Parking Lots	P ⁽¹⁾	P ⁽¹⁾	X		X	P ⁽¹⁾	X		P ⁽¹⁾
Retail Gasoline Outlets			X	X	X	X	X		
Streets, Highways & Freeways	X	P ⁽¹⁾	X	X ⁽⁴⁾	X	P ⁽⁵⁾	X		
X = anticipated P = potential (1) A potential pollutant if landscaping exists on-site. (2) A potential pollutant if the project includes uncovered parking areas. (3) A potential pollutant if land use involves food or animal waste products. (4) Including petroleum hydrocarbons. (5) Including solvents.									

Note: If other monitoring data that is relevant to the project is available. Please include as Attachment C.

CONSTRUCTION BMPs

Please check the construction BMPs that may be implemented during construction of the project. The applicant will be responsible for the placement and maintenance of the BMPs incorporated into the final project design.

- | | |
|--|--|
| <input checked="" type="checkbox"/> Silt Fence | <input type="checkbox"/> Desilting Basin |
| <input checked="" type="checkbox"/> Fiber Rolls | <input checked="" type="checkbox"/> Gravel Bag Berm |
| <input checked="" type="checkbox"/> Street Sweeping and Vacuuming | <input checked="" type="checkbox"/> Sandbag Barrier |
| <input type="checkbox"/> Storm Drain Inlet Protection | <input checked="" type="checkbox"/> Material Delivery and Storage |
| <input checked="" type="checkbox"/> Stockpile Management | <input checked="" type="checkbox"/> Spill Prevention and Control |
| <input checked="" type="checkbox"/> Solid Waste Management | <input checked="" type="checkbox"/> Concrete Waste Management |
| <input checked="" type="checkbox"/> Stabilized Construction Entrance/Exit | <input checked="" type="checkbox"/> Water Conservation Practices |
| <input type="checkbox"/> Dewatering Operations | <input checked="" type="checkbox"/> Paving and Grinding Operations |
| <input checked="" type="checkbox"/> Vehicle and Equipment Maintenance | |
| <input checked="" type="checkbox"/> Any minor slopes created incidental to construction and not subject to a major or minor grading permit shall be protected by covering with plastic or tarp prior to a rain event, and shall have vegetative cover reestablished within 180 days of completion of the slope and prior to final building approval. | |

EXCEPTIONAL THREAT TO WATER QUALITY DETERMINATION

Complete the checklist below to determine if a proposed project will pose an "exceptional threat to water quality," and therefore require Advanced Treatment Best Management Practices.

Table 5

No.	CRITERIA	YES	NO	INFORMATION
1.	Is all or part of the proposed project site within 200 feet of waters named on the Clean Water Act (CWA) Section 303(d) list of Water Quality Limited Segments as impaired for sedimentation and/or turbidity? Current 303d list may be obtained from the following site: http://www.swrcb.ca.gov/tmdl/docs/303dlists2006/approved/r9_06_303d_regtmdls.pdf	<input type="checkbox"/>	<input checked="" type="checkbox"/>	If YES, continue to 2. If NO, go to 5.
2.	Will the project disturb more than 5 acres, including all phases of the development?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	If YES, continue to 3. If NO, go to 5.
3.	Will the project disturb slopes that are steeper than 4:1 (horizontal: vertical) with at least 10 feet of relief, and that drain toward the 303(d) listed receiving water for sedimentation and/or turbidity?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	If YES, continue to 4. If NO, go to 5.
4.	Will the project disturb soils with a predominance of USDA-NRCS Erosion factors k_f greater than or equal to 0.4?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	If YES, continue to 6. If NO, go to 5.
5.	Project is not required to use Advanced Treatment BMPs.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Document for Project Files by referencing this checklist.
6.	Project poses an "exceptional threat to water quality" and is required to use Advanced Treatment BMPs.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Advanced Treatment BMPs must be consistent with WPO section 67.811(b)(20)(D) performance criteria

Exemption potentially available for projects that require advanced treatment:

Project proponent may perform a Revised Universal Soil Loss Equation, Version 2 (RUSLE 2), Modified Universal Soil Loss Equation (MUSLE), or similar analysis that shows to the County official's satisfaction that advanced treatment is not required

Now that the need for treatment BMPs has been determined, other information is needed to complete the SWMP.

SITE DESIGN

To minimize stormwater impacts, site design measures must be addressed. The following checklist provides options for avoiding or reducing potential impacts during project planning. If YES is checked, it is assumed that the measure was used for this project.

Table 6

	OPTIONS	YES	NO	N/A
1.	Has the project been located and road improvements aligned to avoid or minimize impacts to receiving waters or to increase the preservation of critical (or problematic) areas such as floodplains, steep slopes, wetlands, and areas with erosive or unstable soil conditions?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.	Is the project designed to minimize impervious footprint?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.	Is the project conserving natural areas where feasible?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.	Where landscape is proposed, are rooftops, impervious sidewalks, walkways, trails and patios be drained into adjacent landscaping?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.	For roadway projects, are structures and bridges be designed or located to reduce work in live streams and minimize construction impacts?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6.	Can any of the following methods be utilized to minimize erosion from slopes:			
6.a.	Disturbing existing slopes only when necessary?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.b.	Minimize cut and fill areas to reduce slope lengths?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.c.	Incorporating retaining walls to reduce steepness of slopes or to shorten slopes?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6.d.	Providing benches or terraces on high cut and fill slopes to reduce concentration of flows?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6.e.	Rounding and shaping slopes to reduce concentrated flow?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6.f.	Collecting concentrated flows in stabilized drains and channels?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

LOW IMPACT DEVELOPMENT (LID)

Each numbered item below is a LID requirement of the WPO. Please check the box(s) under each number that best describes the Low Impact Development BMP(s) selected for this project.

Table 7

1. Conserve natural Areas, Soils, and Vegetation-County LID Handbook 2.2.1
<input checked="" type="checkbox"/> Preserve well draining soils (Type A or B)
<input checked="" type="checkbox"/> Preserve Significant Trees
<input type="checkbox"/> Other. Description:
<input type="checkbox"/> 1. Not feasible. State Reason:
2. Minimize Disturbance to Natural Drainages-County LID Handbook 2.2.2
<input checked="" type="checkbox"/> Set-back development envelope from drainages
Restrict heavy construction equipment access to planned green/open space areas
<input type="checkbox"/> Other. Description:
<input type="checkbox"/> 2. Not feasible. State Reason:
3. Minimize and Disconnect Impervious Surfaces (see 5) -County LID Handbook 2.2.3
<input type="checkbox"/> Clustered Lot Design
<input checked="" type="checkbox"/> Items checked in 5?
<input type="checkbox"/> Other. Description:
<input type="checkbox"/> 3. Not feasible. State Reason:
4. Minimize Soil Compaction-County LID Handbook 2.2.4
<input checked="" type="checkbox"/> Restrict heavy construction equipment access to planned green/open space areas
<input checked="" type="checkbox"/> Re-till soils compacted by construction vehicles/equipment
Collect & re-use upper soil layers of development site containing organic materials
<input type="checkbox"/> Other. Description:
4. Not feasible. State Reason:
5. Drain Runoff from Impervious Surfaces to Pervious Areas-County LID Handbook 2.2.5

LID Street & Road Design
<input type="checkbox"/> Curb-cuts to landscaping
<input type="checkbox"/> Rural Swales
<input type="checkbox"/> Concave Median
<input type="checkbox"/> Cul-de-sac Landscaping Design
<input checked="" type="checkbox"/> Other. Description: Vegetated Buffer Strip (TC-31)
LID Parking Lot Design
<input type="checkbox"/> Permeable Pavements
<input type="checkbox"/> Curb-cuts to landscaping
<input checked="" type="checkbox"/> Other. Description: The project has no parking lots.
LID Driveway, Sidewalk, Bike-path Design
<input checked="" type="checkbox"/> Permeable Pavements
<input checked="" type="checkbox"/> Pitch pavements toward landscaping
<input type="checkbox"/> Other. Description:
LID Building Design
<input type="checkbox"/> Cisterns & Rain Barrels
<input checked="" type="checkbox"/> Downspout to swale
<input type="checkbox"/> Vegetated Roofs
<input type="checkbox"/> Other. Description:
LID Landscaping Design
<input type="checkbox"/> Soil Amendments
<input checked="" type="checkbox"/> Reuse of Native Soils
<input checked="" type="checkbox"/> Smart Irrigation Systems
<input type="checkbox"/> Street Trees
<input type="checkbox"/> Other. Description:
<input type="checkbox"/> 5. Not feasible. State Reason:

CHANNELS & DRAINAGES

Complete the following checklist to determine if the project includes work in channels.

Table 8

No.	CRITERIA	YES	NO	N/A	COMMENTS
1.	Will the project include work in channels?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	If YES go to 2 If NO go to 13.
2.	Will the project increase velocity or volume of downstream flow?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	If YES go to 6.
3.	Will the project discharge to unlined channels?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	If YES go to 6.
4.	Will the project increase potential sediment load of downstream flow?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	If YES go to 6.
5.	Will the project encroach, cross, realign, or cause other hydraulic changes to a stream that may affect downstream channel stability?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	If YES go to 8.
6.	Review channel lining materials and design for stream bank erosion.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Continue to 7.
7.	Consider channel erosion control measures within the project limits as well as downstream. Consider scour velocity.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Continue to 8.
8.	Include, where appropriate, energy dissipation devices at culverts.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Continue to 9.
9.	Ensure all transitions between culvert outlets/headwalls/wingwalls and channels are smooth to reduce turbulence and scour.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Continue to 10.
10.	Include, if appropriate, detention facilities to reduce peak discharges.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Continue to 11.
11.	"Hardening" natural downstream areas to prevent erosion is not an acceptable technique for protecting channel slopes, unless pre-development conditions are determined to be so erosive that hardening would be required even in the absence of the proposed development.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Continue to 12.
12.	Provide other design principles that are comparable and equally effective.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Continue to 13.
13.	End				

SOURCE CONTROL

Please complete the following checklist for Source Control BMPs. If the BMP is not applicable for this project, then check N/A only at the main category.

Table 9

BMP			YES	NO	N/A
1.	Provide Storm Drain System Stenciling and Signage				
1.a.	All storm drain inlets and catch basins within the project area shall have a stencil or tile placed with prohibitive language (such as: "NO DUMPING – DRAINS TO _____") and/or graphical icons to discourage illegal dumping.		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1.b.	Signs and prohibitive language and/or graphical icons, which prohibit illegal dumping, must be posted at public access points along channels and creeks within the project area.		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2.	Design Outdoors Material Storage Areas to Reduce Pollution Introduction				
2.a.	This is a detached single-family residential project. Therefore, personal storage areas are exempt from this requirement.		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.b.	Hazardous materials with the potential to contaminate urban runoff shall either be: (1) placed in an enclosure such as, but not limited to, a cabinet, shed, or similar structure that prevents contact with runoff or spillage to the storm water conveyance system; or (2) protected by secondary containment structures such as berms, dikes, or curbs.		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2.c.	The storage area shall be paved and sufficiently impervious to contain leaks and spills.		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2.d.	The storage area shall have a roof or awning to minimize direct precipitation within the secondary containment area.		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3.	Design Trash Storage Areas to Reduce Pollution Introduction				
3.a.	Paved with an impervious surface, designed not to allow run-on from adjoining areas, screened or walled to prevent off-site transport of trash; or,		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3.b.	Provide attached lids on all trash containers that exclude rain, or roof or awning to minimize direct precipitation.		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.	Use Efficient Irrigation Systems & Landscape Design				
	The following methods to reduce excessive irrigation runoff shall be considered, and incorporated and implemented where determined applicable and feasible.				
4.a.	Employing rain shutoff devices to prevent irrigation after precipitation.		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.b.	Designing irrigation systems to each landscape area's specific water requirements.		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.c.	Using flow reducers or shutoff valves triggered by a pressure drop to control water loss in the event of broken sprinkler heads or lines.		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.d.	Employing other comparable, equally effective, methods to reduce irrigation water runoff.		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.	Private Roads				

BMP		YES	NO	N/A
	The design of private roadway drainage shall use at least one of the following			
5.a.	Rural swale system: street sheet flows to vegetated swale or gravel shoulder, curbs at street corners, culverts under driveways and street crossings.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.b.	Urban curb/swale system: street slopes to curb, periodic swale inlets drain to vegetated swale/biofilter.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5.c.	Dual drainage system: First flush captured in street catch basins and discharged to adjacent vegetated swale or gravel shoulder, high flows connect directly to storm water conveyance system.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5.d.	Other methods that are comparable and equally effective within the project.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6.	Residential Driveways & Guest Parking			
	The design of driveways and private residential parking areas shall use one at least of the following features.			
6.a.	Design driveways with shared access, flared (single lane at street) or wheelstrips (paving only under tires); or, drain into landscaping prior to discharging to the storm water conveyance system.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.b.	Uncovered temporary or guest parking on private residential lots may be: paved with a permeable surface; or, designed to drain into landscaping prior to discharging to the storm water conveyance system.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.c.	Other features which are comparable and equally effective.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
7.	Dock Areas			
	Loading/unloading dock areas shall include the following.			
7.a.	Cover loading dock areas, or design drainage to preclude urban run-on and runoff.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
7.b.	Direct connections to storm drains from depressed loading docks (truck wells) are prohibited.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
7.c.	Other features which are comparable and equally effective.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8.	Maintenance Bays			
	Maintenance bays shall include the following.			
8.a.	Repair/maintenance bays shall be indoors; or, designed to preclude urban run-on and runoff.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8.b.	Design a repair/maintenance bay drainage system to capture all wash water, leaks and spills. Connect drains to a sump for collection and disposal. Direct connection of the repair/maintenance bays to the storm drain system is prohibited. If required by local jurisdiction, obtain an Industrial Waste Discharge Permit.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8.c.	Other features which are comparable and equally effective.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
9.	Vehicle Wash Areas			
	Priority projects that include areas for washing/steam cleaning of vehicles shall use the following.			
9.a.	Self-contained; or covered with a roof or overhang.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
9.b.	Equipped with a clarifier or other pretreatment facility.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
9.c.	Properly connected to a sanitary sewer.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
9.d.	Other features which are comparable and equally effective.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

BMP		YES	NO	N/A
10.	Outdoor Processing Areas			
	Outdoor process equipment operations, such as rock grinding or crushing, painting or coating, grinding or sanding, degreasing or parts cleaning, waste piles, and wastewater and solid waste treatment and disposal, and other operations determined to be a potential threat to water quality by the County shall adhere to the following requirements.			
10.a.	Cover or enclose areas that would be the most significant source of pollutants; or, slope the area toward a dead-end sump; or, discharge to the sanitary sewer system following appropriate treatment in accordance with conditions established by the applicable sewer agency.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
10.b.	Grade or berm area to prevent run-on from surrounding areas.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
10.c.	Installation of storm drains in areas of equipment repair is prohibited.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
10.d.	Other features which are comparable or equally effective.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
11.	Equipment Wash Areas			
	Outdoor equipment/accessory washing and steam cleaning activities shall be.			
11.a.	Be self-contained; or covered with a roof or overhang.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
11.b.	Be equipped with a clarifier, grease trap or other pretreatment facility, as appropriate	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
11.c.	Be properly connected to a sanitary sewer.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
11.d.	Other features which are comparable or equally effective.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
12.	Parking Areas			
	The following design concepts shall be considered, and incorporated and implemented where determined applicable and feasible by the County.			
12.a.	Where landscaping is proposed in parking areas, incorporate landscape areas into the drainage design.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
12.b.	Overflow parking (parking stalls provided in excess of the County's minimum parking requirements) may be constructed with permeable paving.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
12.c.	Other design concepts that are comparable and equally effective.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
13.	Fueling Area			
	Non-retail fuel dispensing areas shall contain the following.			
13.a.	Overhanging roof structure or canopy. The cover's minimum dimensions must be equal to or greater than the area within the grade break. The cover must not drain onto the fuel dispensing area and the downspouts must be routed to prevent drainage across the fueling area. The fueling area shall drain to the project's treatment control BMP(s) prior to discharging to the storm water conveyance system.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
13.b.	Paved with Portland cement concrete (or equivalent smooth impervious surface). The use of asphalt concrete shall be prohibited.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
13.c.	Have an appropriate slope to prevent ponding, and must be separated from the rest of the site by a grade break that prevents run-on of urban runoff.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

BMP			YES	NO	N/A
13.d.	At a minimum, the concrete fuel dispensing area must extend 6.5 feet (2.0 meters) from the corner of each fuel dispenser, or the length at which the hose and nozzle assembly may be operated plus 1 foot (0.3 meter), whichever is less.		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Please list other project specific Source Control BMPs in the following box. Write N/A if there are none.

Landscaping of manufactured slopes.

Homeowner education for proper routine maintenance of landscaping as well as urban housekeeping practices and automobile use to reduce the introduction of pollutants coming in contact with runoff.

All driveways will drain to areas that are currently vegetated. These areas will likely continue to be part of the lot landscaping.

TREATMENT CONTROL

To select a structural treatment BMP using Treatment Control BMP Selection Matrix (Table 10), each priority project shall compare the list of pollutants for which the downstream receiving waters are impaired (if any), with the pollutants anticipated to be generated by the project (as identified in Table 4). Any pollutants identified by Table 4, which are also causing a Clean Water Act section 303(d) impairment of the receiving waters of the project, shall be considered primary pollutants of concern. Priority projects that are anticipated to generate a primary pollutant of concern shall select a single or combination of stormwater BMPs from Table 10, which **maximizes pollutant removal** for the particular primary pollutant(s) of concern.

Priority development projects that are **not** anticipated to generate a pollutant for which the receiving water is CWA 303(d) impaired shall select a single or combination of stormwater BMPs from Table 10, which are effective for pollutant removal of the identified secondary pollutants of concern, consistent with the "maximum extent practicable" standard.

Table 10. Treatment Control BMP Selection Matrix

Pollutants of Concern	Bioretention Facilities (LID)*	Settling Basins (Dry Ponds)	Wet Ponds and Wetlands	Infiltration Facilities or Practices (LID)*	Media Filters	High-rate biofilters	High-rate media filters	Trash Racks & Hydro-dynamic Devices
Coarse Sediment and Trash	High	High	High	High	High	High	High	High
Pollutants that tend to associate with fine particles during treatment	High	High	High	High	High	Medium	Medium	Low
Pollutants that tend to be dissolved following treatment	Medium	Low	Medium	High	Low	Low	Low	Low

*Additional information is available in the County of San Diego LID Handbook.

NOTES ON POLLUTANTS OF CONCERN:

In Table 11, Pollutants of Concern are grouped as gross pollutants, pollutants that tend to associate with fine particles, and pollutants that remain dissolved.

Table 11

Pollutant	Coarse Sediment and Trash	Pollutants that tend to associate with fine particles during treatment	Pollutants that tend to be dissolved following treatment
Sediment	X	X	
Nutrients		X	X
Heavy Metals		X	
Organic Compounds		X	
Trash & Debris	X		
Oxygen Demanding		X	
Bacteria		X	
Oil & Grease		X	
Pesticides		X	

A Treatment BMP must address runoff from developed areas. Please provide the post-construction water quality treatment volume or flow values for the selected project Treatment BMP(s). Guidelines for design calculations are located in Chapter 5, Section 4.3, Principle 8 of the County SUSMP. Label outfalls on the BMP map. The Water Quality peak rate of discharge flow (Q_{wQ}) and the Water Quality storage volume (V_{wQ}) is dependent on the type of treatment BMP selected for the project.

Outfall	Tributary Area (acres)	Q_{wQ} (cfs)	V_{wQ} (ft ³)
Sheet flow across road	7.3 acres	1.4	-

Please check the box(s) that best describes the Treatment BMP(s) selected for this project.

Biofilters
<input type="checkbox"/> Bioretention swale
<input checked="" type="checkbox"/> Vegetated filter strip
<input type="checkbox"/> Stormwater Planter Box (open-bottomed)
<input type="checkbox"/> Stormwater Flow-Through Planter (sealed bottom)
<input type="checkbox"/> Bioretention Area
<input type="checkbox"/> Vegetated Roofs/Modules/Walls
Detention Basins
<input type="checkbox"/> Extended/dry detention basin with grass/vegetated lining
<input type="checkbox"/> Extended/dry detention basin with impervious lining
Infiltration Basins
<input type="checkbox"/> Infiltration basin
<input type="checkbox"/> Infiltration trench
<input type="checkbox"/> Dry well
<input type="checkbox"/> Permeable Paving
<input type="checkbox"/> Gravel
<input type="checkbox"/> Permeable asphalt
<input type="checkbox"/> Pervious concrete
<input type="checkbox"/> Unit pavers, ungrouted, set on sand or gravel
<input type="checkbox"/> Subsurface reservoir bed
Wet Ponds or Wetlands
<input type="checkbox"/> Wet pond/basin (permanent pool)
<input type="checkbox"/> Constructed wetland
Filtration
<input type="checkbox"/> Media filtration
<input type="checkbox"/> Sand filtration
Hydrodynamic Separator Systems
<input type="checkbox"/> Swirl Concentrator
<input type="checkbox"/> Cyclone Separator
Trash Racks and Screens

Include Treatment Datasheet as Attachment E. The datasheet should include the following:	COMPLETED	NO
1. Description of how treatment BMP was designed. Provide a description for each type of treatment BMP.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Engineering calculations for the BMP(s)	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Please describe why the selected treatment BMP(s) was selected for this project. For projects utilizing a low performing BMP, please provide a detailed explanation.

Treatment BMP for this project was selected for two reasons.

1. The Vegetated Buffer Strip directly addresses the reason a treatment BMP is required. Namely, it directly treats the runoff from the new access road.

2. This type of treatment has good results for the type of pollutants of concern that are possible from this type of development, see table 4 and TC-31.

Note. The slope on the east side of the access road will be vegetated. While this may have some water quality benefit, it is not presented as a BMP. It will be installed to ensure that no erosion occurs and to maintain the sheet flow so that it can sheet flow over the road (where it will be treated by the Vegetated Buffer Strip).

MAINTENANCE

Please check the box that best describes the maintenance mechanism(s) for this project. Guidelines for each category are located in Chapter 5, Section 5.2 of the County SUSMP.

CATEGORY	SELECTED	
	YES	NO
First	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Second ¹	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Third ¹	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Fourth	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Note:

1. Projects in Category 2 or 3 may choose to establish or be included in a Stormwater Maintenance Assessment District for the long-term maintenance of treatment BMPs.

ATTACHMENTS

Please include the following attachments.

ATTACHMENT		COMPLETED	N/A
A	Project Location Map	<input checked="" type="checkbox"/>	<input type="checkbox"/>
B	Site Map	<input checked="" type="checkbox"/>	<input type="checkbox"/>
C	Relevant Monitoring Data	<input type="checkbox"/>	<input checked="" type="checkbox"/>
D	LID and Treatment BMP Location Map	<input checked="" type="checkbox"/>	<input type="checkbox"/>
E	Treatment BMP Datasheets	<input checked="" type="checkbox"/>	<input type="checkbox"/>
F	Operation and Maintenance Program for Treatment BMPs	<input checked="" type="checkbox"/>	<input type="checkbox"/>
G	Fiscal Resources	<input checked="" type="checkbox"/>	<input type="checkbox"/>
H	Certification Sheet	<input checked="" type="checkbox"/>	<input type="checkbox"/>
I	Addendum	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Note: Attachments A and B may be combined.

ATTACHMENT A

PROJECT LOCATION MAP



ATTACHMENT B

SITE MAP

See Project Location Map

ATTACHMENT C

RELEVANT MONITORING DATA

(NOTE: PROVIDE RELEVANT WATER QUALITY MONITORING DATA IF AVAILABLE.)

ATTACHMENT D

LID AND TREATMENT BMP LOCATION MAP

ATTACHMENT E

I - TREATMENT BMP DATASHEET

(NOTE: POSSIBLE SOURCE FOR DATASHEETS CAN BE FOUND AT WWW.CABMPHANDBOOKS.COM. INCLUDE ENGINEERING CALCULATIONS FOR SIZING THE TREATMENT BMP.)

See attached SD-10, SD-12 and TC-31.

II - TREATMENT BMP CALCULATIONS

Treatment BMP's are one of three types and the calculations required depend upon the type. All calculations in this section referring to the "Hydrology Report" means the official Hydrology Report submitted to the County of San Diego as a part of the project for which this report is being prepared.

The types and required calculations are as follows:

1. FLOW CONTROL BMP This type of BMP is design to meet a specific flow requirement of Section G.5.2.3.1 (b) of the County of San Diego Stormwater Standards Manual. This type of design is applicable to the TC-30 Vegetated Swale which **is not** proposed as part of this project.

HYDROLOGY

The design is based on the Rational Formula of $Q_{WQ}=CIA$ where,

Q_{WQ} = Water quality flow rate of the BPM in cubic feet per second.

C = The runoff factor of the watershed being considered. The C used for this calculation is from the Hydrology Report and is equal to 0.30.

I = Rainfall intensity calculated below as 1.00 inches per hour. The procedure in Section G 5.2.3.1 (b) of the Stormwater Standards Manual was followed.

A = Area of the watershed draining to the BPM which is 7.3 acres. This area is to the east of the project and is a flat (1% slope) well vegetated area (see photograph below). This area drains as sheet flow from the east and will cross the Maggio Drive as sheet flow.

ATTACHMENT E (cont.)

Calculation:

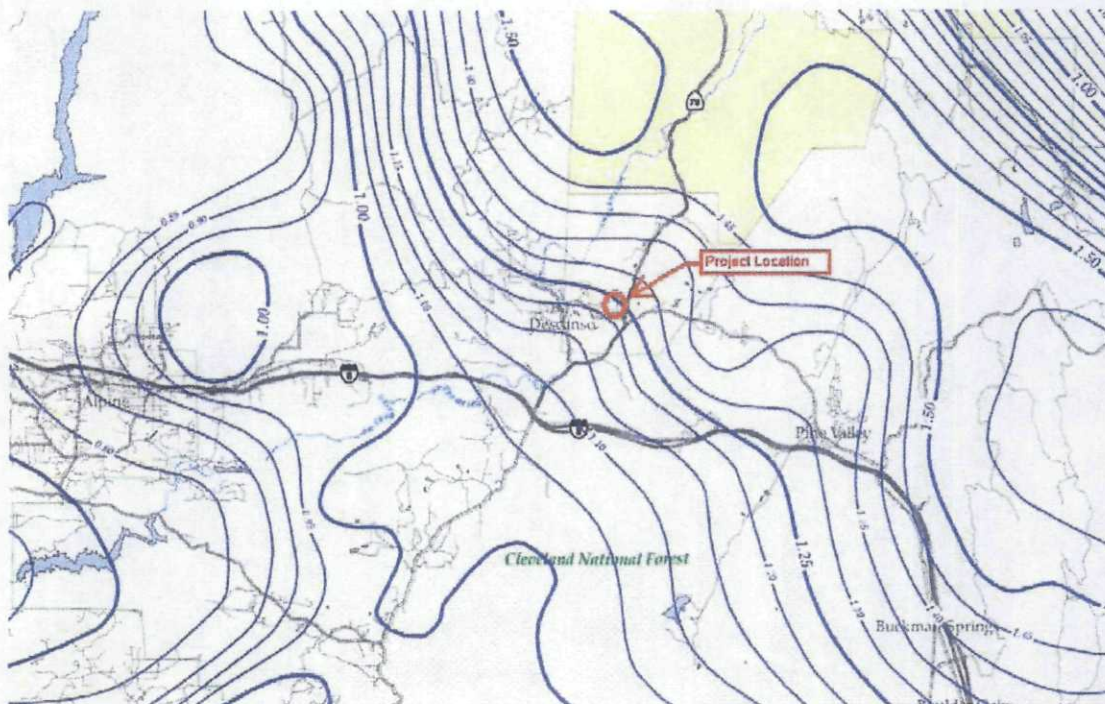
$$Q_{WQ} = CIA$$

$$Q_{WQ} = 0.30 \times 0.65 \times 7.3$$

$$Q_{WQ} = 1.4 \text{ c.f.s.}$$

DETAILED CALCULATIONS

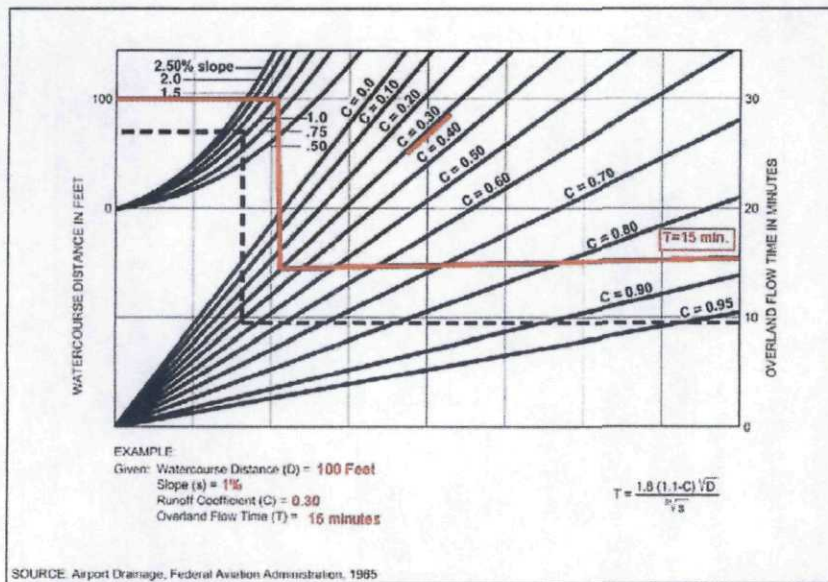
Rainfall Amount: The 24 hour 85th Percentile storm amount is 1.25 inches as shown below from the County Isopluvial Map for the 85th percentile.



The County's Hydrology Manual specifies that the 6-hour rainfall event (the controlling event for a basin this size) shall be between 0.45 and 0.65 of the 24-hour rainfall. For this project the average of that or 0.55 was used. This produces a 6-hour 85th Percentile rainfall of $0.55 \times 1.25 \text{ inches} = 0.69 \text{ inches}$.

Time of Concentration: The drainage area for this project has been graded such that it will maintain sheet flow until it reaches the project (see photographs). The basin length is approximately 300 feet. Although overland flow is normally constrained to 100 feet, the basin will maintain this flow through the entire length. However, only 200 feet was considered in the analysis by determining the overland flow time for 100 feet and doubling that (rather than tripling it). The figure below is from the County Hydrology Manual with the project data plotted.

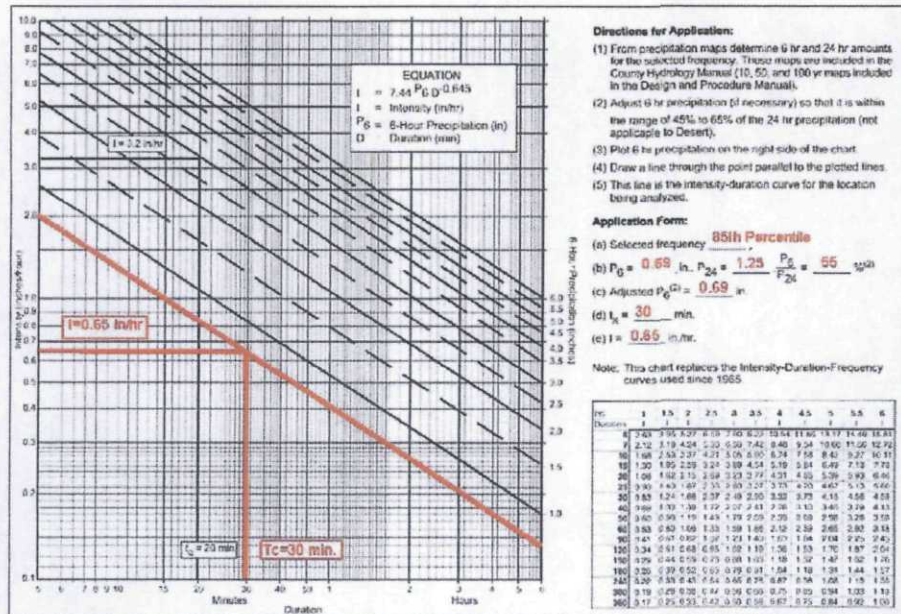
ATTACHMENT E (cont.)



Rational Formula - Overland Time of Flow Nomograph

FIGURE
3-3

As indicated above, the 15 minutes will be doubled to produce the final Time of Concentration = 30 minutes. Rainfall Intensity can be calculated once the duration has been determined. Given the $T_c=30$ minutes and the 6-hour 85th Percentile Rainfall is 0.69 inches, the Intensity can be determined from the graph below (from the County Hydrology Manual) as being 0.65 inches per hour.



Intensity-Duration Design Chart - Example

FIGURE
3-2

ATTACHMENT E (cont.)

HYDRAULICS

The existing terrain in the area will ensure that the flow continues as sheet flow over the road.

2. VOLUME CONTROL BPM This type of BMP is design to meet a specific volume requirement of Section G.5.2.3.1 (a) i of the County of San Diego Stormwater Standards Manual. This type of design is applicable to the TC-xx Dry Detention Basin which is not proposed as part of this project.

3. NEITHER FLOW NOR VOLUME CONTROL BPM This type of BPM is designed based on criteria other than the flow or volume. It is designed to meet the requirement of Section G.6.3.2.i of the County of San Diego Stormwater Standards Manual. This type of design is applicable to the TC-31 Vegetated Buffer Strip which is proposed as part of this project.

The Vegetated Buffer Strip is design based on the area being treated. In this case that would be the adjacent paved private road that is being added to provide all weather access to the parcels. The road is twenty-four feet wide and the buffer strip can treat about twice its area. Therefore, the buffer strip would only need to be twelve feet wide. A fifteen feet wide buffer strip is proposed on the down-flow side of the road which exceeds the requirement.

Attachment F

OPERATION AND MAINTENANCE PROGRAM FOR TREATMENT BMPS

The treatment BMP for this project was selected from the California Stormwater Quality Association's New Development and Redevelopment Handbook. Shown below as the Rural road in Figure 3-5, a Vegetated Buffer Strip will be used on the west or down-flow side of the private road, Maggio Drive. The road will actually be 24' wide as required by the County. A Vegetated Swale (TC-30) was originally planned to be used on the east side of the road. However, final design eliminated the need for and the ability to install this BMP. A general description of the treatment BMP is shown in Attachment E (TC-31). It was chosen because the flat nature of the project (average slope of the lots are less than 1%) lends itself to this type of treatment. Also the average annual rainfall at Descanso (approximately 27") well exceeds the minimum rainfall needed to keep the vegetation alive (10" per TC-31). The developer will water the Vegetated Buffer Strip once per week for the first year to ensure the establishment of the vegetation. After that the normal rainfall during the year will keep the vegetation alive.

Section 3
Site and Facility Design for Water Quality Protection

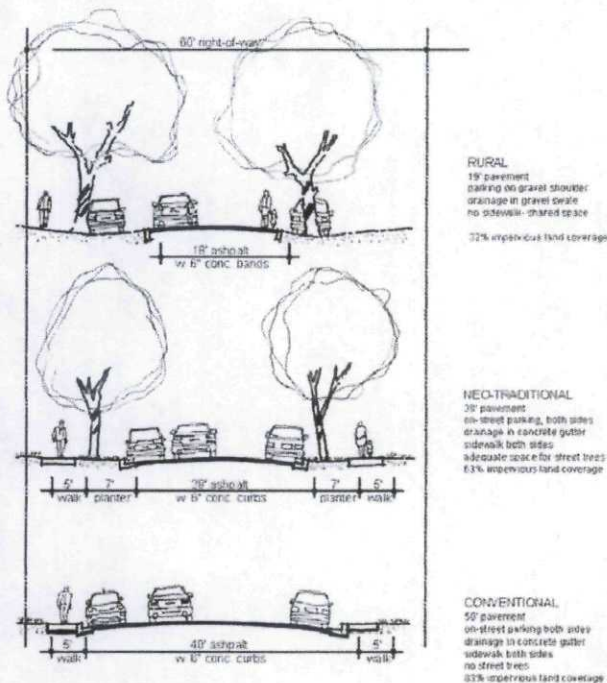


Figure 3-5
Comparison of Street Cross-Sections (two-way traffic, residential access streets)

ATTACHMENT G

FISCAL RESOURCES

The BMP selected for this project, *Vegetated Buffer Strip (TC-31)*, qualifies as a Maintenance Category 1. For this particular BMP the maintenance requirements are very small. The major effort will be to establish the vegetation the first year. After that the annual rainfall of Descanso will be enough to maintain the vegetation in a live state, which is all that is required for it to function.

For this purpose, a contract between the developer and the County guaranteeing the first year of weekly watering should be sufficient.

ATTACHMENT H

CERTIFICATION SHEET

This Stormwater Management Plan has been prepared under the direction of the following Registered Civil Engineer. The Registered Civil Engineer attests to the technical information contained herein and the engineering data upon which recommendations, conclusions, and decisions are based.



7-21-09

Date

ATTACHMENT I

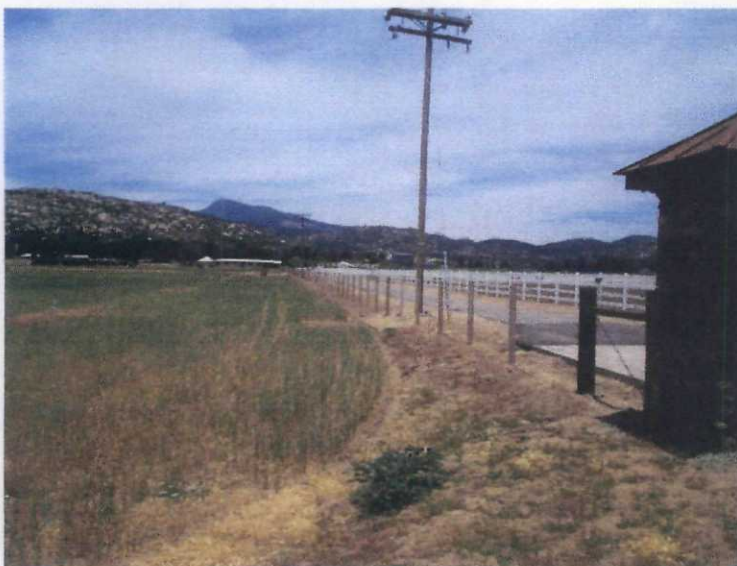
ADDENDUM (PHOTOGRAPHS)

The following are photographs of the project taken in early June of 2009. They show among other things the green of the Descanso area. The annual rainfall in this community keeps the area green almost year round



LOOKING NORTH ALONG
THE CENTER OF MAGGIO
DRIVE

Notice the flat nature of the area that will maintain the sheet flow that currently crosses Maggio Drive.



LOOKING NORTH ALONG
THE WEST SIDE OF MAGGIO
DRIVE

This is the area where the Vegetated Buffer Strip will be installed. Notice that the Buffer Strip itself will discharge to a vegetated area.

ATTACHMENT I (cont.)



LOOKING NORTH ALONG
THE EAST SIDE OF MAGGIO
DRIVE

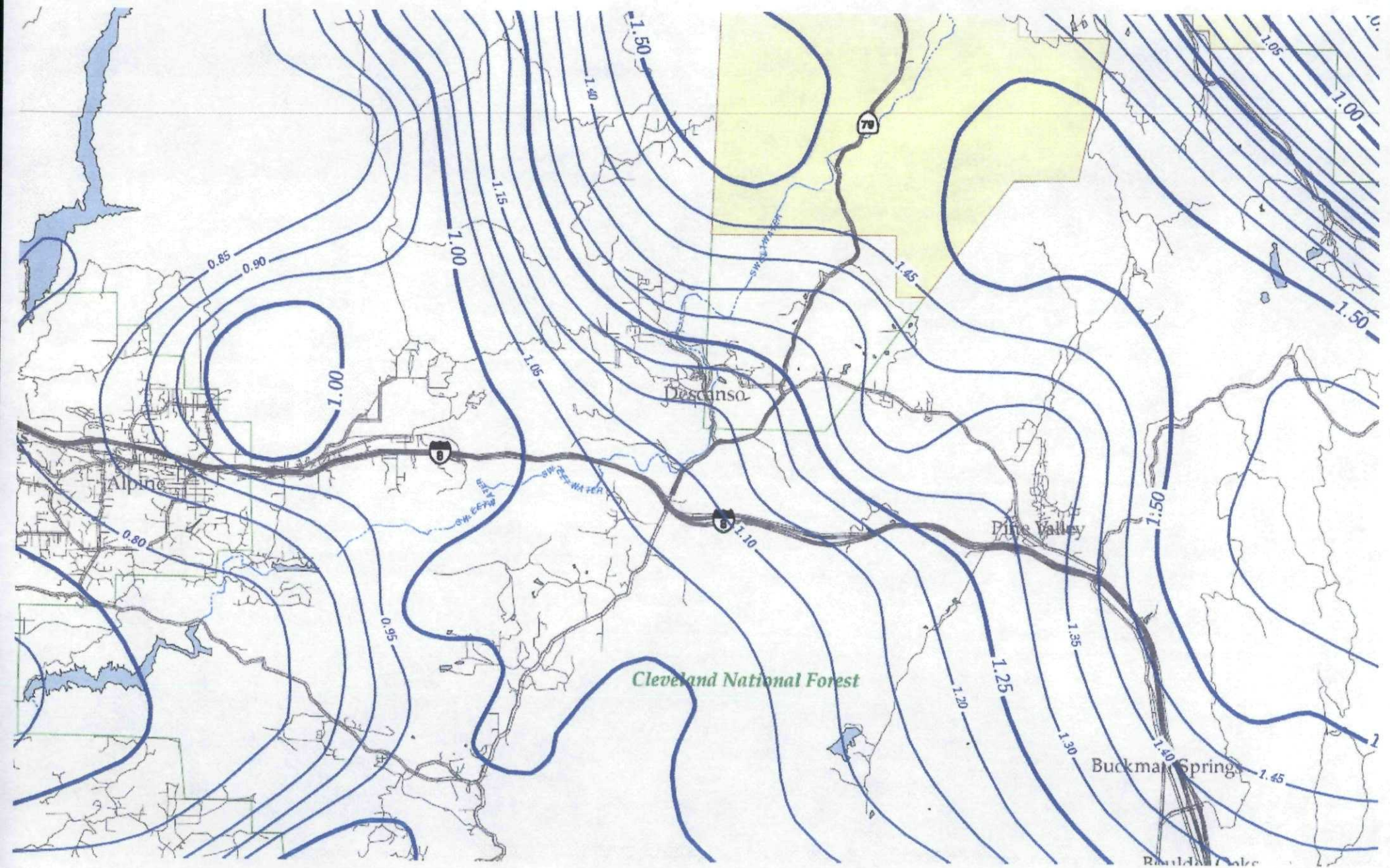
Notice the existing green grass in
the foreground.

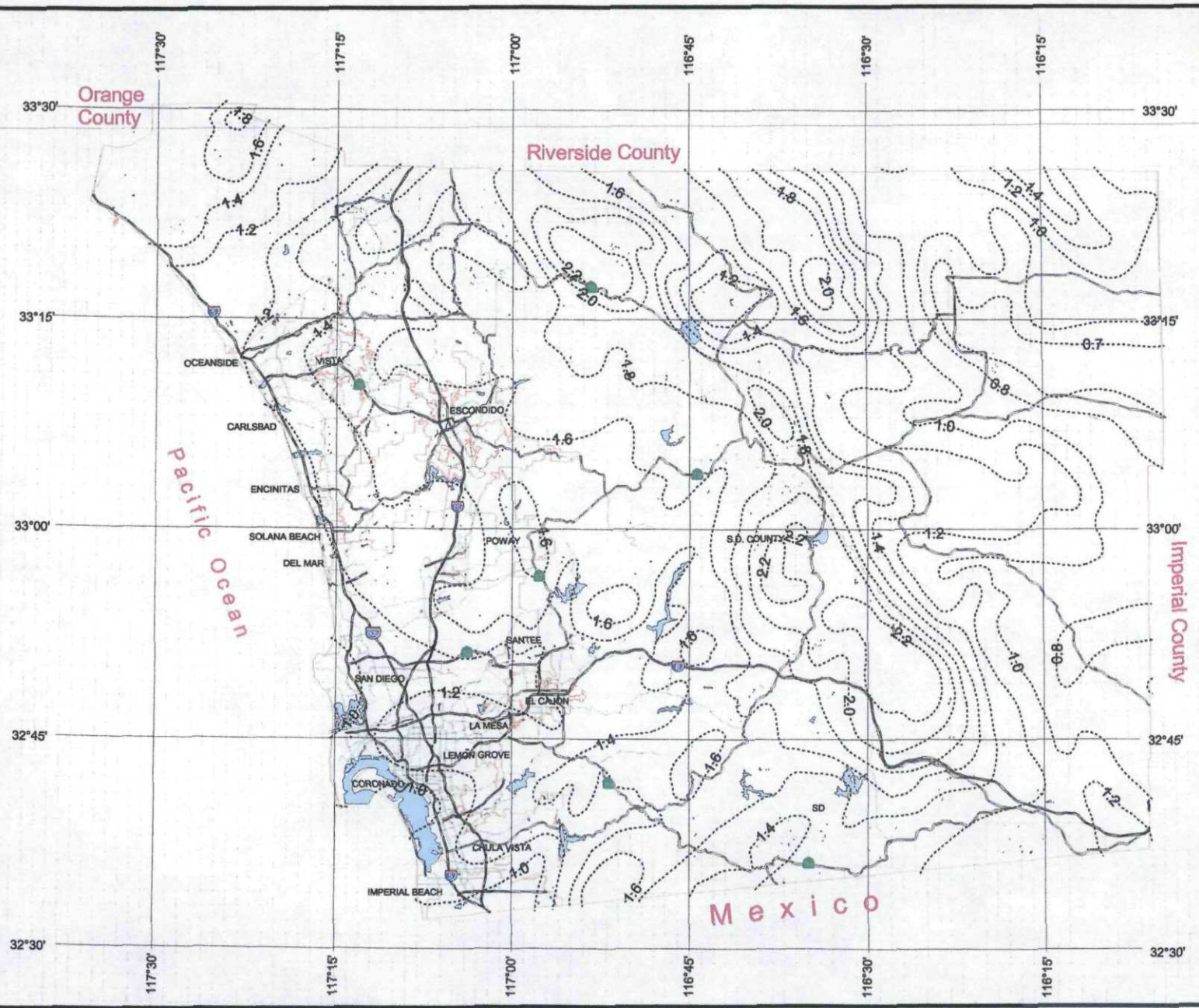
ATTACHMENT J

Details for Table 3

Stormwater Quality Determination

1. There is about 8 feet of fall across the parcel, measured from its highest to lowest points. It has an average slope of 1% with the northeast corner being the highest point and the southwest corner being the lowest.
2. The land use is low density residential within the project area and adjacent areas.
3. There is no dry weather flow.
4. This project is located within the Sweetwater Hydrologic Unit, the Upper Sweetwater Hydrologic Area, and the Descanso Hydrologic Sub Area (909.34). This area drains to Descanso Creek, which then drains into Sweetwater Creek to the west of the site. The Sweetwater Hydrologic Unit is approximately 186 square miles. This entire project is a minute portion of this hydrologic area at less than 0.02% of the total area.
5. There are no 303(d) impaired receiving water bodies.
6. There are no High Risk Areas within the project limits.
7. There are no Regional Board special requirements.
8. The general climate in the project area is arid. Annual rainfall is 27.1 inches from the County of San Diego Hydrology Manual 2003.
9. The hydrologic soil type is B.
10. There are no contaminated or hazardous soils within the project limits.





County of San Diego Hydrology Manual



Rainfall Isoplethials

2 Year Rainfall Event - 6 Hours

----- Isopleth (Inches)



3 0 3 Miles

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ORANGE COUNTY

RIVERSIDE COUNTY,

IMPERIAL COUNTY

**85th Percentile Precipitation
Isopluvial Map
Rainfall in Inches**

DRAFT
6/27/01



Dr. Robert M. L. Hecht, M.D., is a professor of medicine and director of the Division of Hematology and Oncology at the University of California, San Diego. He is also a member of the National Cancer Institute and the American Society of Hematology.